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~~ANIMAL MOTION TOY~~

Ans B17

## BACKGROUND OF THE INVENTION

### Field of the Invention:

5 The present invention relates to an animal motion toy in which a toy body modeled in the form of an animal is adapted to perform specific motion.

### Description of the Prior Art:

10 Hitherto, various structures have been proposed as this type of animal motion toy. Many of these structures are arranged such that, as described in Japanese Patent Laid-Open No. 103689/1984, if a switch provided on a toy body is turned on, a motor is driven immediately, a gear-interlinked mechanism engaging  
15 with this motor is moved in an interlinking manner, and such motion members as legs of the toy body, which are interlinked with the gear-interlinked mechanism, perform specific motion.

20 According to the above-described conventional arrangement, since the toy body immediately performs preset motion in a preset sequence, a player merely experiences the pleasure of looking on the motion of the toy body. In addition, there is a problem in that, since the motion is merely repeated in the  
25 preset sequence, the player is liable to become tired

of it and, hence, the motion lacks sustained interest.

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*P*  
SUMMARY OF THE INVENTION

Accordingly, an object of the present invention  
5 is to provide an interesting animal motion toy which  
gives a player a strong sense of solidarity with a  
toy body since the toy body is adapted to perform  
specific motion in response to an instruction of the  
player, thereby overcoming the drawbacks of the prior  
10 art.

Another object of the present invention is to  
provide an interesting animal motion toy which is  
capable of securing sustained interest of a player  
by providing variations to reacting motion, thereby  
3 15 preventing the player's tendency to lose interest in  
it and securing sustained interest.

To this end, in accordance with one aspect of  
the present invention, there is provided an animal  
motion toy comprising: a toy body modeled in the  
20 form of an animal and having movable arm frames on  
both sides, an openable mouth portion, and a built-in  
sounding member; a drive mechanism incorporated in  
the toy body and adapted to drive a first crankshaft  
for rotating the arm frames and a second crankshaft  
25 for opening and closing the mouth portion and causing

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the sounding member to make a sound; and a control unit provided in the toy body, having a microphone for receiving an external sound signal and adapted to control the drive mechanism according to said  
5 external signal applied to the microphone.

In accordance with another aspect of the present invention, there is provided an animal motion toy comprising: a toy body modeled in the form of an animal and having movable arm frames on both sides,  
10 leg frames on both sides movable back and forth, an openable mouth portion, and a built-in sounding member; a drive mechanism incorporated in the toy body and having a first crankshaft for rotating the arm frames, a second crankshaft for opening and clos-  
15 ing the mouth portion and causing the sounding member to make a sound, and a third crankshaft for moving the leg frames back and forth and adapted to drive the crankshafts in steps; and a control unit provided in the toy body, having a microphone for receiving  
20 an external sound signal, and adapted to control the drive mechanism according to said external sound signal applied to the microphone.

According to an animal motion toy of the present invention, if an external sound signal is generated  
25 for the toy body by clapping hands or the like, this

external sound signal is applied to the microphone, and this sound signal is applied to the control unit to operate the control unit, which, in turn, drives the drive mechanism.

5           Furthermore, the operation of this drive mechanism rotates the first crankshaft and the second crankshaft. The rotation of the first crankshaft rotates the respective arm frames. In addition, the rotation of the second crankshaft causes the  
10   upper jaw frame, for instance, to move upwardly in relation to the lower jaw frame, thereby assuming a posture of opening or closing the mouth portion. At the same time, the sounding member makes a sound simultaneously with the operation of the upper jaw  
15   frame.

          Thus, the toy body exhibits the aforementioned various motion by the sound of clapping of hands, for instance. However, at that juncture, if hands are clapped once, the toy body performs motion by the  
20   generation of an external sound signal constituted by the sound of one clapping of hands, and the motion is suspended by the ceasing of the external sound signal. Accordingly, the toy body intermittently performs the above-described motion in response to  
25   the external sound signal of the number of clapping

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of hands.

In addition, in accordance of another embodiment of an animal motion toy of the present invention, when the drive mechanism is driven by an external  
5 sound signal, the operation of the drive mechanism rotates the first crankshaft and the second crankshaft or the third crankshaft. The rotation of the first and second crankshafts causes the toy body to perform various motions as in the case of the animal  
10 motion toy of the aforementioned first invention. However, the rotation of the third crankshaft moves the leg frames alternately back and forth, so that the toy body exhibits a walking motion.

Furthermore, either the respective operations  
15 of the both arm frames, the upper jaw frame of the mouth portion, and the sounding member or the operation of the leg frames is selected and set in advance, the toy body exhibits the selected motion, and when it is preset in such a manner that each of the operations  
20 is to be carried out in steps, these operations are automatically changed over to exhibit these operations in steps.

Thus, the toy body exhibits the aforementioned various motions by the sound of clapping of hands, for  
25 instance. However, at that juncture, if hands are

clapped once, the toy body performs motion by the generation of an external sound signal constituted by the sound of one clapping of hands, and the motion is suspended by the ceasing of the external sound signal. Accordingly, the toy body intermittently performs the above-described motion in response to the external sound signal of the number of clapping of hands.

Other objects, features and advantages of the present invention will become apparent in the following detailed description of the embodiments when read in conjunction with the accompanying drawings.

Brief Description of the Drawings:

Fig. 1 is a front elevational view of an animal motion toy in accordance with an embodiment of the present invention;

Fig. 2 is a partially-cutaway front elevational view of an internal structure thereof;

Fig. 3 is a side elevational view taken in the direction of one side thereof;

Fig. 4 is a side elevational view taken in the direction of the other side thereof;

Fig. 5 is an exploded perspective view of an internal structure thereof;

Fig. 6 is a cross-sectional view of a clutch

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mechanism thereof;

Fig. 7 is a block diagram of a control unit;

Fig. 8 is a side elevational view illustrating  
an internal mechanism of an animal motion toy in  
accordance with another embodiment of the present  
invention;

Fig. 9 is an exploded perspective view thereof;

Fig. 10 is a front elevational view of a change-  
over mechanism thereof; and

Fig. 11 is a cross-sectional view taken along a  
line XI-XI of Fig. 10.

#### DESCRIPTION OF THE PREFERRED EMBODIMENTS

In Figs. 1 to 6, a toy body 1 modeled in the  
form of, for instance, a monkey, comprises a main body  
frame 2, arm frames 3, 3 on both sides thereof, leg  
frames 4, 4 on both sides thereof, and a fur coat 5.

The main body frame 2 is formed of synthetic  
resin and includes a body frame portion 6, a head  
frame portion 7, and a hip frame portion 8 having in  
a lower portion thereof a floor-contacting projection  
8a. An accommodating recess 9 is formed in the rear  
of the body frame portion 6, and a microphone 10 is  
installed in this accommodating recess 9. In addition,  
a guide port 11 is formed in an upper portion of the  
head frame portion 7. A face frame portion 12 in

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~~and~~ 17 15  
a

the front portion is provided with eyes 13, 13.

An upper jaw frame 15 which opens and closes a mouth portion relative to a lower jaw frame 14 formed integrally with the face frame portion 12 is fixed  
5 openably to the face frame portion 12. A headphone 17 is mounted on the head frame portion 7.

Each of the arm frames 3, 3 on both sides has a flexible frame piece 20 in which a core material  
a 19 is embedded in an ~~elongated~~ <sup>elongated</sup> planar synthetic resin  
10 piece 18. A mounting piece 21 made of synthetic resin is secured integrally with one end of the flexible frame piece 20. A portion of this mounting piece 21 which is adjacent to the other end thereof is inserted  
a and retained in a transversely ~~elongated~~ <sup>elongated</sup> groove 22  
15 formed on the respective sides of the jaw portion of the main body frame 2 such as to be vertically movable.

A frame member 23 is secured inside the body frame portion 6 of the main body frame 2. A battery  
a 20 case 24 accommodating a <sup>power source such as</sup> battery B is secured in the rear portion of this frame member 23. A cover plate 26 is disposed on the underside of the body frame portion 6 in such a manner that a bottom plate 25 of the frame member 23 and the battery case 24 is open-  
25 able. A main switch 27 projects from the cover



plate 26.

The frame member 23 is provided with a drive mechanism A. This drive mechanism A ~~is arranged~~ <sup>included</sup> such that <sup>a</sup> a forward and reverse changeover motor 28 electrically connected to the battery B <sup>which</sup> is secured to the frame member 23, ~~and a reduction gear 31 of~~ a rotary shaft 30 pivotally mounted on the frame member 23 <sup>A2</sup> meshes with the pinion 29 of the motor 28. <sup>A3</sup> A drive gear 32 ~~being~~ <sup>is nonrotatably</sup> secured to the rotary shaft 30. A rotary shaft 33 is pivotally supported by the frame member 23 such as to be rotatable. A clutch gear 34 meshing with the drive gear 32 is secured to the rotary shaft 33. Claw clutches 35, 36 which engage or disengage <sup>upon</sup> the rotation in the mutually opposite direction are formed at the both side portions of the clutch gear 34. In addition, a first drive gear 39 and a second drive gear 40 are ~~pivotaly~~ <sup>rotatably</sup> supported <sup>ON</sup> by guide shafts 37, 38 which are rotatable about the rotary shaft 33 extending integrally from the both sides of the clutch gear 34, so that the first and second drive gears 39, 40 are rotatable and axially slidable. A claw clutch 41 disengageably ~~engaging~~ <sup>engageable</sup> with one claw clutch 35 is formed inside the first drive gear 39, while <sup>another</sup> a claw clutch 42 disengageably ~~engaging~~ <sup>engageable</sup> with the other claw clutch 36 is formed inside

the second drive gear 40. Coil springs 43, 44 are respectively wound around the guide shafts 37, 38 and between the frame member 23 and the respective outer walls of the first and second drive gears 39, 40. The first and second drive gears 39, 40 are respectively urged by the coil springs 43, 44 in the direction of the clutch gear 34, and the engagement between the claw clutches 35, 41 and between the claw clutches 36, 42 is effected, respectively.

*10*  
*end of 4*  
*B*  
*B*  
*B*  
*a* 15  
*is fixed*  
A first crankshaft 45 ~~is~~ rotatably ~~pivotal~~ supported by the frame member 23. A first interlinking gear 46 meshing with the first drive gear 39 ~~is~~ secured to the first crankshaft 45, while a second interlinking gear 47, meshing with the second drive gear 40 is rotatably supported by the same. In addition, the lower ends of lifting and lowering

*first crankshaft 45*  
*a bearing means 98 on*  
levers 49, 49 are respectively fixed to the crank-arms 48, 48 of the end portions of the first crankshaft 45 such as to be rotatable. The upper end portions of the lifting and lowering levers 49, 49 are respectively inserted and retained in the inner end portions, i.e., the other ends, of the mounting pieces 21, 21 of the arm frames 3, 3. The rotation of the first crankshaft 45 causes the lifting and lowering levers 49, 49 on both sides to perform the lifting

and lowering motion. At the same time, the arm  
frames 3, 3 are adapted to be moved vertically  
~~with the transversely~~ <sup>about transversely</sup> elongated grooves 22, 22 in  
the main body frame 2.

In addition, <sup>A 5</sup> a second crankshaft 50 <sup>which</sup> is pivotally  
supported by the frame member 23 <sup>so</sup> ~~such~~ as to be ro-  
tatable. A first relay gear 51, meshing with the  
first interlinking gear 46, is <sup>fixedly</sup> secured to the second  
crankshaft 50, while a second relay gear 52, meshing  
with the second interlinking gear 47, is pivotally

<sup>B 2</sup> supported by ~~the same~~ <sup>so</sup> such as to be rotatable. A  
crank arm 53 which is an end portion of the second <sup>transversely</sup>  
crankshaft 50 is inserted rotatably in a ~~transversely~~ <sup>elongated</sup>  
~~elongated~~ insertion hole 55 formed in a lower end

portion of the interlinking lever 54. This inter-  
linking lever 54 is disposed vertically movably via <sup>elongated</sup>  
a support shaft 57 inserted in a vertically ~~elongated~~  
guide hole 56 formed in the <sup>midportion</sup> ~~midway~~ of the interlink-

ing lever 54. A pushing piece 58 is formed in a  
horizontally bent shape at the upper end portion of  
this interlinking lever 54. A projecting piece 61  
of a bellows 60 of a sounding member 59 is retained  
in the midway of this pushing piece 58. The sounding  
member 59 is secured to an upper portion of the frame  
member 23. A lower end portion of an interlinking

piece 62 is secured to an end portion of the pushing  
piece 58 of the interlinking lever 54. A lower end  
portion of an operating piece 64 projecting down-  
wardly from the proximal end of the upper jaw frame  
15 via a shaft lever 63 is pivotally secured to an  
upper end portion of the interlinking piece 62. The  
interlinking lever 54 is moved vertically by the  
crankarm 53. The sounding member 59 is pushed by  
the pushing piece 58 thereof to cause the sounding  
member 59 to make a sound. The vertical movement  
of the interlinking piece 62 opens and closes the  
upper jaw frame 15 with a horizontal shaft 16 as a  
fulcrum.

*AP*  
A third crankshaft 65, *which* is pivotally supported  
by the frame member 23 such as to be rotatable. A  
leg-driving gear 66 meshing with the second relay  
gear 52 is *fixedly* secured to the third crankshaft 65.

Substantially intermediate portions of leg levers  
68, 68 are each pivotally supported by crankarms 67,  
67, i.e., the end portions thereof, such as to be  
rotatable. The leg frames 4, 4 are each pivotally  
secured to the lower end portions of the leg levers  
68, 68 on both sides via transversely ~~elongated~~ *elongated* inser-  
tion holes 69, 69 and support shafts 70, 70. The both  
end portions of a guide support lever 72 pivotally

supported by the frame member 23 are rotatably inserted in vertically elongated guide holes 71, 71 formed at upper end portions of the leg levers 68, 68 on both sides.

5           A rotary switch 73 connected to the motor 28 and used to change over the forward and reverse rotation of the motor 28 is secured inside the head frame portion 7 of the main body frame 2. An operating lever 74 for changing over this rotary switch  
10       73 projects vertically movably from the inside of the guide port 11 formed in the head frame 7, and a pressing portion 75 is formed at an upper end portion of the operating lever 74. A circuit board 76 is secured inside the hip frame portion 8 of the  
15       main body frame 2. A control unit 77 connected to the microphone 10, the motor 28, and the rotary switch 73 and adapted to control the motion of the toy body 1 is disposed on the circuit board 76. As  
a       shown in Fig. 7, this control unit 77 comprises <sup>the microphone 10,</sup> a  
20       level detection circuit 78 for detecting the level of a sound signal applied to the microphone  
10, a switching circuit 79 operative by a certain detection level of the level detection circuit 78, a time constant circuit 80 for holding the operation  
25       of the switching circuit 79 for a fixed time, an

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amplifier circuit 81, and a drive circuit 82 for driving the motor 28. <sup>A7</sup> ✓

The operation of the above-described arrangement will be described hereafter.

5 First, the main switch 27 is turned on. Then, if an external sound signal such as specific acoustic sound or vibratory sound is generated by clapping of hands, a musical instrument such as a whistle, or an acoustic instrument, this external sound signal is applied to the microphone 10, and ~~is, at the same~~

<sup>A8</sup> ✓  
~~time, output to~~ the level detection circuit 78

as a sound signal. Then, this level detection circuit 78 detects the level of the input sound signal, and when the sound signal

<sup>A</sup> ✓  
15 is at a predetermined level, the sound signal is applied to the switching circuit 79, thereby turning on the switching circuit 79. The turning on of this switching circuit 79 operates the time constant circuit 80 and holds the on-state of the switching circuit 79 for a fixed time, and, at the same  
20 time, amplifies the same by the amplifying circuit 81, and outputs to the drive circuit 82. The operation of the drive circuit 82 drives the motor 28 in the forward direction, for instance, and the driving of  
25 the motor 28 is stopped after a lapse of a fixed time.

When the motor 28 is driven, the drive gear 32 is rotated via a pinion 29 and the reduction gear 31, and the clutch gear 34 meshing with the drive gear 32 is rotated in the direction of the arrow of a solid line <sup>on gear 34</sup> in Fig. 5. When the clutch gear 34 is rotated, the first drive gear 39 is moved in an interlinking relationship via the claw clutches 35, 41 which are engaged with each other, and is rotated in the direction of the arrow of a solid line in Fig. 5. The clutch 36 of the clutch gear 34 rotates while sliding without engaging with the claw clutch 42 of the second drive gear 40 <sup>and</sup> pushing the second drive gear 40 outwardly <sup>from</sup> the axial direction in opposition to the coil spring 44. Accordingly, when the motor 28 is rotated forwardly, the first drive gear 39 is rotated by means of the clutch gear 34 without imparting the rotation to the second drive gear 40.

Then, the rotation of the first drive gear 39 rotates the first crankshaft 45 via the first interlinking gear 46. At the same time, the rotation of the crankarms 48, 48 of both ends thereof that are offset with each other causes the respective lifting and lowering levers 49, 49 substantially simultaneously, with the result that the arm frames 3,

B 3 are vertically moved substantially simultaneously,  
with the transversely ~~elongated~~<sup>elongated</sup> groove 22 as the  
center. In this case, since the arm frames 3, 3 on  
both sides are formed flexibly, when they are set  
5 in a state in which they are suspended on both sides  
of the main body frame 2, as shown in Fig. 1, the  
arm frames 3, 3 are moved vertically in this sus-  
pended state. Meanwhile, when they are set in a  
state in which they are lifted to the upper portions  
10 of both sides of the head frame portion 7, the arm  
frames 3, 3 are moved vertically in this lifted  
state. Incidentally, when a setting is made so that  
one arm frame 3 is suspended and the other arm frame  
3 is lifted, the arm frames 3, 3 are moved verti-  
15 cally in that state of setting.

In addition, the rotation of the first inter-  
linking gear 46 causes the second crankshaft 50 to  
rotate, and the rotation of the crankarm 53, i.e.,  
one end portion thereof, causes the interlinking lever  
20 54 to move vertically. The pushing piece 58 of this  
interlinking lever 54 causes the bellows 60 of the  
sounding member 59 to be extended and shrunk, thereby  
causing the sounding member 59 to make a sound. On  
the other hand, the vertical movement of the inter-  
25 linking piece 62 fixed to the pushing piece 58 causes



the operating piece 64 to move vertically, and, at the same time, causes the upper jaw frame 15 to move vertically in relation to the lower jaw frame 14 with the horizontal shaft 16 as the center, thereby causing the mouth portion to perform an opening and closing operation.

Accordingly, the toy body 1 exhibits motion of singing and dancing while opening and closing the mouth by vertically moving the upper jaw frame 15 with the both arm frames 3, 3 rotating vertically. Each of these motions is effected in response to the generation of the external sound signal of a specific clap when hands are clapped once. When hands are clapped intermittently several times, each of the aforementioned motions is repeated intermittently in response to the external sound signal generated by that number of claps. Accordingly, the motor 28 is automatically driven in response to the clap and the toy body 1 performs the aforementioned motion, and when the clap ceases, the motor 28 automatically stops, and the toy body 1 stops the motion. Then, the motor 28 is set for standby ready for the next external sound signal.

If the fur coat 5 on the upper portion of the head frame 7 of the toy body 1 is pushed, the pushing

portion 75 of the operating lever 74 of the rotary switch 73 is pushed, which in turn causes the operating lever 74 to be lowered, and, at the same time, the rotary switch 73 is changed over, thereby changing over the motor 28 from the forward rotation to the reverse rotation.

In this state, when an external sound signal, such as the one described above, is applied into the microphone 10, the motor 28 rotates in the reverse direction by means of the aforementioned operations of the control unit 77. The drive of this motor 28

rotates the clutch gear 34 in the direction of the ~~arrow of a chain line~~ <sup>dotted line arrow on gear 34</sup> in Fig. 5. The second drive gear 40 is moved in an interlinking relationship via

the mutually engaging claw clutches 36, 42 and rotates in the direction of the ~~arrow of a chain line~~ <sup>dotted line arrow on gear 34</sup> in Fig.

5. The claw clutch 35 of this clutch gear 34 rotates while pushing the first drive gear 39 outwardly ~~of~~ <sup>in</sup> the axial direction in opposition to the coil spring

43 while sliding ~~fast~~ <sup>out</sup> without engaging with the claw clutch 41 of the first drive gear 39. Accordingly, when the motor 28 is rotated in the reverse direction, the second drive gear 40 is rotated by means of the clutch gear 43 without imparting the rotation to the first drive gear 39.

As a result, the various types of motion of the toy body 1, such as dancing while singing, at the time when the motor 28 is rotated in the forward direction are stopped.

5           In addition, as described earlier, the rotation of the second drive gear 40 shifts the leg driving gear 66 via the second interlinking gear 47 and the second relay gear 52, which in turn rotates the third crankshaft 65 of the leg driving gear 66. The rota-  
10          tion of the transversely offset crankarms 67, 67, i.e., end portions of the third crankshaft 65, causes the leg levers 68, 68 to be alternately moved back and forth with the end portions of the guide support lever 72 inserted in the guide holes 71, 71 as the  
15          fulcrum, thereby moving the leg frames 4, 4 alternately back and forth.

          Accordingly, the toy body 1 exhibits walking motion while swinging to the right and the left by means of the operation of the leg frames 4, 4 that  
20          are moved back and forth with the floor-contacting projecting portion 8a located at the lower portion of the hip frame portion 8 as the center. This walking motion is effected such as to respond to an external sound signal, as mentioned above.

25          Thus, by changing over the rotary switch 73 with

the main switch 27 turned on, the motor 28 is changed over to the forward or reverse direction. Therefore, the motor 28 is driven by an external sound signal, and the toy body 1 alternately repeats, in response to external sound signal and for respective fixed times, the motion of singing and dancing while opening and closing the mouth by vertically moving the upper jaw frame 15 while vertically rotating the arm frames 3, 3 as well as the motion of walking.

In the foregoing embodiment, description has been made of a case where the motion of the arm frames 3, 3, the upper jaw frame 15, and the sounding member 59 and the motion of the leg frames 4, 4 are manually changed over by providing the manually operated rotary switch 73. However, an arrangement may be made such as to automatically change over these motions by providing an automatic <sup>gear</sup> changeover mechanism <sup>FIG 10</sup>.

In this case, for instance, an arrangement shown Figs. 8 to 11 may be adopted. <sup>This</sup> ~~In other words, this~~ automatic changeover mechanism is arranged as follows: A rotary shaft 85 is ~~pivotal~~ <sup>rotatably</sup> supported by the frame member 23. A changeover operation gear 86 meshing with the aforementioned drive gear 32 is <sup>nonrotatably</sup> secured to this rotary shaft 85. A sliding gear 87 meshing with the drive gear 32 is pivotally supported by the rotary

a shaft 85 such as to be axially ~~slidable~~<sup>slidable</sup>. A changeover gear 89 formed in a fixed positional relationship with the sliding gear 87 via a spacer 88 is pivotally supported by the rotary shaft 85 such as to be slidable. A plurality of pushing projections 90 having different pitches relative to each other are formed integrally on the peripheral side portion of the changeover operation gear 86 on the side of the sliding gear 87. These pushing projections 90 are each formed substantially in the shape of a herringbone by means of a pushing apex surface 91 and guide slanting surfaces 92 provided on both sides of the pushing apex surface 91. In addition, a substantially triangular engaging projection 93 is formed integrally with the outer side portion of the sliding gear 87 on the side of the changeover operation gear 86. The tip of this engaging projection 93 is adapted to engage consecutively with the pushing apex portions 91, the guide slanting surfaces 92, and sliding surfaces 94 between the pushing projections 90 of the respective pushing projections 90 of the changeover operation gear 86. When the engaging projection 93 is engaged with the pushing apex portion 91 of each of the pushing projections 90, the changeover gear 89 meshes with the first interlinking gear 46. When

the engaging projection 93 is engaged with the sliding surface 94, the changeover gear 89 meshes with the second interlinking gear 47. Furthermore, a coil spring 95 is wound around the rotary shaft 85 between the outer peripheral portion of the changeover gear 89 and the frame member 23, and the sliding gear 87 is constantly urged to approach the changeover operation gear 86 by means of this coil spring 95 via the changeover gear 89 and the spacer 88. The changeover operation gear 86 and the sliding gear 87 both meshing with the drive gear 32 are formed with a mutually different number of teeth.

By providing such an arrangement, when the motor 28 is driven by receiving an external sound signal, as in the case of the preceding embodiment, the drive gear 32 is rotated, and the changeover operation gear 86 and the sliding gear 87 are rotated simultaneously. As the changeover operation gear 86 and the sliding gear 87 rotate, the sliding gear 87 is gradually separated from the changeover operation gear 86 in opposition to the coil spring 95 owing to the mutual difference in the number of teeth. The tip portion of the engaging projection 93 runs <sup>up</sup> on the pushing apex portion 91 of the pushing projection 90 and is pushed by the same. At the same time, the changeover

gear 89 meshes with the first interlinking gear 46 and is rotated by the same. The first crankshaft 45 of this first interlinking gear 46 and the second crankshaft 50 of the first relay gear 51 are rotated, and the arm frames 3, 3 the sounding member 59, and the upper jaw frame 15 exhibit their respective motions, as described in the preceding embodiment.

In addition, the rotation of the drive gear 32 continues to rotate the changeover operation gear 86 and the sliding gear 87. At the same time, the tip portion of the engaging projection 93 of the sliding gear 87 is rotated while sliding on the pushing apex portion 91 of the pushing projection 90 of the changeover operation gear 86 owing to the mutual difference in the number of teeth. Then, the tip portion of the engaging projection 93 is disengaged from the pushing apex portion 91 of the pushing projection 90. At the same time, the sliding gear 87 is pushed in the axial direction by means of the returning force of the coil spring 95. Simultaneously as the tip portion of the engaging projection 93 moves from one guide slanting surface 92 and engages with the sliding surface 94, the changeover gear 89 which is integral with the sliding gear 87 is disengaged from the first interlinking gear 46 and meshes with

the second interlinking gear 47.

The rotation of this second interlinking gear 47 rotates the third crankshaft 65 via the second relay gear 52 and the leg driving gear 66, and the  
5 leg frames 4, 4 are moved alternately back and forth, as in the case of the preceding embodiment.

Thus, the rotation of the drive gear 32 in one direction rotates the changeover operation gear 86 and the sliding gear 87. As they rotate continuously,  
10 the engagement of the changeover gear 89 is automatically changed over alternately relative to the first interlinking gear 46 and the second interlinking gear 47 by means of the approaching and separating movements of the sliding gear 87 with respect  
15 to the changeover operation gear 86. The interlinked engagement of these changeover operations allows the toy body 1 to exhibit the same motion as that of the preceding embodiment.

~~(Effects of the Invention)~~

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20 In accordance with one aspect of the present invention, when the toy body receives an external sound signal, the arm frames on both sides, the mouth portion, and the sounding member are operated, so  
25 that the toy body makes a sound while operating its both arms and opening and closing the mouth.



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Accordingly, the toy body positively displays the  
aforementioned motion as if it responds to an instruc-  
tion of a player who generates an external sound  
signal. Moreover, the toy body reacts in response  
5 to the frequency of the external sound signal gen-  
erated. Therefore, it becomes possible for the player  
to instantly or intermittently control the motion  
of the toy body as he desires. Accordingly, the  
player's sense of solidarity with the toy body is  
10 strong, and it therefore becomes possible to provide  
a very interesting animal motion toy as compared with  
an animal toy whose motion the player just looks on.

In accordance with another aspect of the present  
invention, since the toy body moves the leg frames  
15 on both sides thereof back and forth, the leg frames  
can be operated independently or in an interlinking  
relationship by means of an automatic changeover with  
respect to the motion of the arm frames, the upper  
jaw frame, and the sounding member, with the result  
20 that the types of motion responding to external sound  
signal increase, and the animal toy displays an un-  
expected initial movement depending on a point of  
action at which the motion is stopped. Accordingly,  
it becomes possible to provide an interesting animal  
25 motion toy body which is capable of securing sustained

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interest by preventing the tendency to readily lose  
interest in the motion by virtue of its unexpected <sup>movements</sup><sub>1</sub>  
~~ness.~~

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